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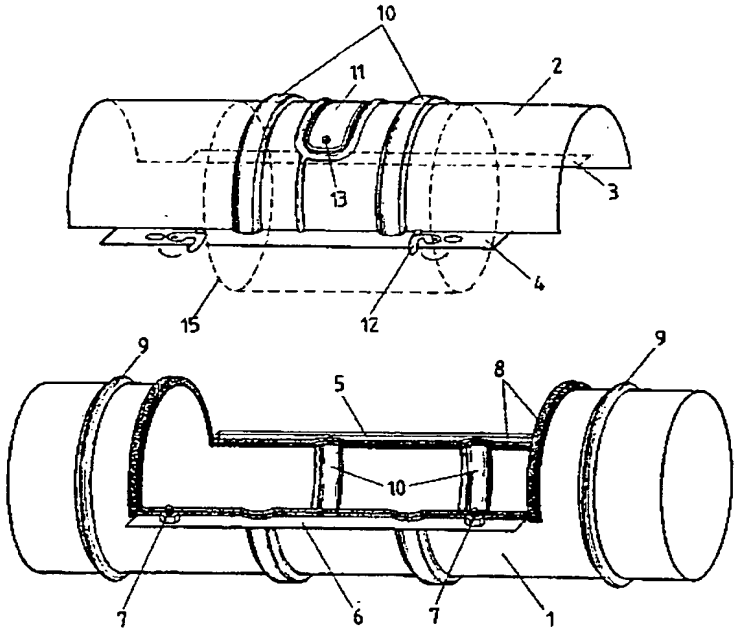
(54) Title: A PIPE COMPONENT CONTAINING A CLEANING HATCH



(57) Abstract

Pipe component, in which there is an opening for cleaning the pipework and a hatch (2) which covers this opening and which may be removed or turned aside, and which includes or to which may be installed an adjustment flap (19) or other device intended for the flow duct. In accordance with the invention the flow duct has essentially a standard diameter for the entire length of the pipe component, and the opening is on a greatest length at least the size of half the circumference. It is the intention of the invention to achieve a pipe component equipped with a hatch that makes cleaning of the pipework possible, which also offers the possibility of connecting simply to the place of the opening various devices to be installed in the pipework. Good flow characteristics have been regarded as being an extremely important objective of the invention.

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A Pipe Component containing a Cleaning Hatch

The object of the invention is a pipe component, in which there is an opening for cleaning the pipework and a hatch that can be removed or turned covering this opening, and which includes or to which may be attached an adjustment valve or other device intended for the flow duct, and in which the flow duct is open in both directions to make cleaning possible and which has essentially a standard diameter for the entire length of the pipe component, and that the opening is in length at least half of the size of the circumference.

The cleaning of air-conditioning ducts usually takes place through openings and pipe connections specially designed for this purpose. The openings are covered with removable hatches, which must be replaced after cleaning. It is difficult to put the hatches that are in general use tightly back into position. Cleaning has been hampered by devices used in the ductwork, by among other things adjustment valves, metering connections, and fire-stops.

Finnish patent application F1844038 presents a new kind of arrangement in an air-conditioning duct, in which an intermediate section that is in outer form the same as the rest of the duct can be removed and replaced at right angles to the length of the duct. When the intermediate section is removed. The intermediate section may contain some component, for example a fire-stop, flow restrictor, or metering device. When considering later installation the problem is that the length and form of the intermediate section are precisely determined, nor can existing components be located as intermediate sections in the ductwork if their dimensions deviate from the dimensions of the original intermediate section.

A technique related to the field of the invention is also presented in the Swedish publication print SE 434569. A basic principle for making cleaning easier is shown in the publication. According to the publication this is achieved by attaching a flap to the hatch to be removed, when the ductwork is free to be cleaned after the hatch has been removed. The realization in the aforementioned SE publication has remained half-way and the publication only deals with the installation of an adjsutment flap in connection with the cleaning hatch, although there may be other devices in the duct. The structure shown can in no way be applied in connection

with cleaning hatches in present in use. The box-like chamber structure does not permit the installation of any kind of metering sensor at this point, because these require stabilized flow conditions both before the sensor and after it.

Taken widely the field of the invention also includes the method of installing an axial fan presented in Danish patent publication DK 143301. The publication is in no way connected with the cleaning of ductwork, but according to it the installation of the fan is carried out onto a hatch made in the ductwork, in which case it is precisely the maintainance of the fan that is easy. The publication presented is not as such applicable to the application of any device whatever inside the duct. In particular the installation of the more usual air-conditioning components is not possible in this way due to their projecting pipe parts.

The intention of the invention is to achieve a pipe component equipped with a hatch that makes duct cleaning possible, and which at the same time offers a simple possibility of connecting various devices to be installed in the duct next to the opening. This is realized in accordance with Patent Claim 1. Good flow properties and a solution to make possible the location of any duct component inside have been regarded as very important goals for the invention. The invention makes possible the realization of a duct component system advantageously in such a way that the various devices can be rapidly installed in the same kind of duct section hatch pairs. When the opening is covered with a cover plate, the pipe component can act purely as a cleaning point and the later installation of any device at all is simple. The second way of installing devices later in the pipe component in accordance with the invention is realized in such a way that the hatch includes the form of the opening, from which an opening can be formed if required. This form can be made in such a way that fracture edges for the opening are stamped onto the hatch, when the opening cover can be easily punched out from the hatch.

The form of realization in accordance with Patent Claim 2 makes possible the installation of even complicated devices inside the pipe component, for a separate pipe forms a sturdy frame for an adjustment flap or other device even before installation.

Many devices are placed on a short pipe and they are princiaplly intended to be connected as a part of the ductwork, in which case the pipe has

indented bands at each end to fit the pipe joints into place. The form of adaption in accordance with Patent Claim 5 makes the use of these kind of devices also possible in connection with pipe components.

In what follows the invention is illustrated with the aid of the accompanying figures, which show various adaptions of the invention.

Figure 1 shows the pipe component opened
Figure 2 shows a cross-section of the pipe component
Figure 3 shows alternative fittings of devices to the hatch
Figure 4 shows a cross-section of the pipe component equipped with an adjustment flap

The principal parts of the pipe component are the duct section 1 and the hatch 2, Figure 1. One of the edges of the opening in the duct section has a flange 5, which is bent to form a groove. The flange 3 in the hatch 2 is pushed into this groove and correspondingly the flanges 4 and 6 on the other side are pressed together and locked with bolts 7 and catches 12.

Tape 8, which seals the hatch 2 and the duct section to one another, runs round the edge of the opening in the duct section 1.

In order to make the installation of the pipe component easier indented bands 9 are formed in its ends and these fit the pipes to be connected at the ends into place.

The bands 10 and the cover plate 11 make it possible to install various kinds of devices rapidly later as well. In particular devices placed on a separate pipe 15 can be simply attached to this pipe component. When using the pipe component purely as a cleaning point there is a cover plate 11 in the hatch 2, which is secured with two screws 13 and is sealed by means of a tape placed in the edge groove, Figure 2.

Various devices e.g. adjustment device 14, adjustment flap 15 and flow metering ring 16, which are most advantageously in a separate pipe 14, 15, 16 Figure 3, can be adapted to the pipe component. The devices are secured advantageously from the separate pipe 14, 15, 16 to the hatch 2 by for example spot welding. Parts that protrude from the flow duct, the axle of the adjsutment device and the support 17 of the metering units can fit through the opening 20 in the ahtch 2, and this makes rapid installation possible. The indented bands 10 of the hatch 2 and the duct section 1 are

formed in accordance with the indented bands 19 of the separate pipes 14, 15.

The separate pipe 15 is formed to sit as tightly as possible between the duct section 1 and the hatch 2, when a standard diameter is essential for the pipe component, Figure 4.

Patent Claims

1. A pipe component, in which there is an opening for cleaning the pipework and a hatch (2) which covers this opening and may be removed or turned aside, and which includes or on which may be installed an adjustment flap (19) or other device intended for the flow duct, and in which the flow duct is open in both directions to make cleaning possible and which has essentially a standard diameter for the entire length of the pipe component, and that the opening has over its greatest length a size of at least half the circumference, characterized in that the hatch (2) includes an opening (20) or the form of an opening, and which opening (20) or form of an opening and adjustment flap (19, 15) or other device are formed to fit one another such a way that the protruding part (18) from the flow duct fits through the opening (20).

2. A pipe component in accordance with Patent Claim 1, characterized in that the adjustment flap (19) or other device is located on a separate pipe (15), which when placed inside the pipe component forms a part of the flow duct.

3. A pipe component in accordance with Patent Claim 2, characterized in that the separate pipe (15) is secured by welding, rivets, or screws to the hatch (2).

4. A pipe component in accordance with Patent Claims 1, 2, or 3, characterized in that the hatch (2) includes a cover plate (11) that covers the opening (20).

5. A pipe component in accordance with Patent Claim 3, characterized in that there are corresponding indented bands (10) in the duct section (1) and the hatch (2) to those in the separate pipe (15) to be attached to the place of the hatch (2).

6. A pipe component in accordance with Patent Claims 1, 2, 3, 4, or 5, characterized in that both the duct section (1) and the hatch (2) are separately insulated.

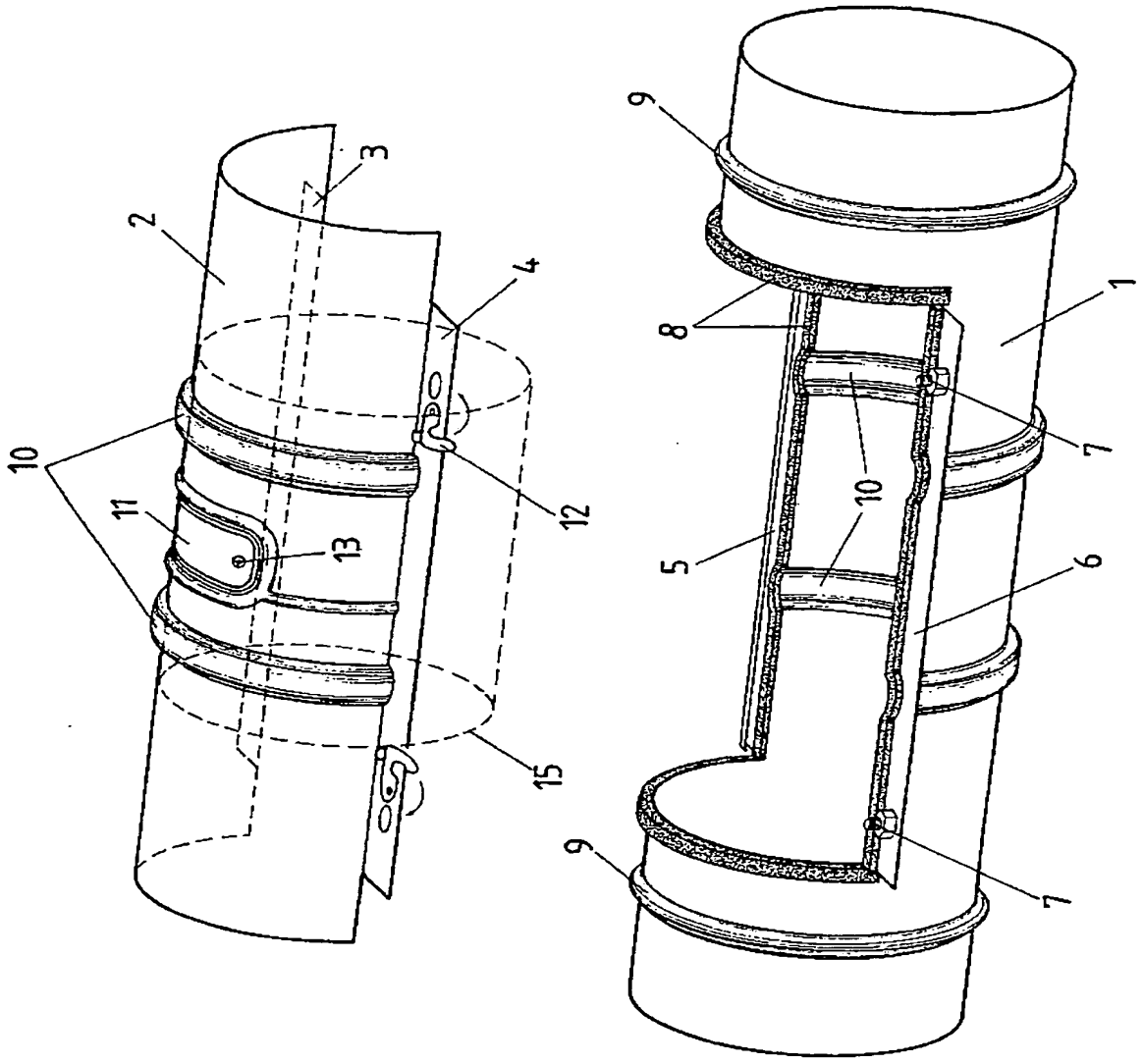

FIG. 1

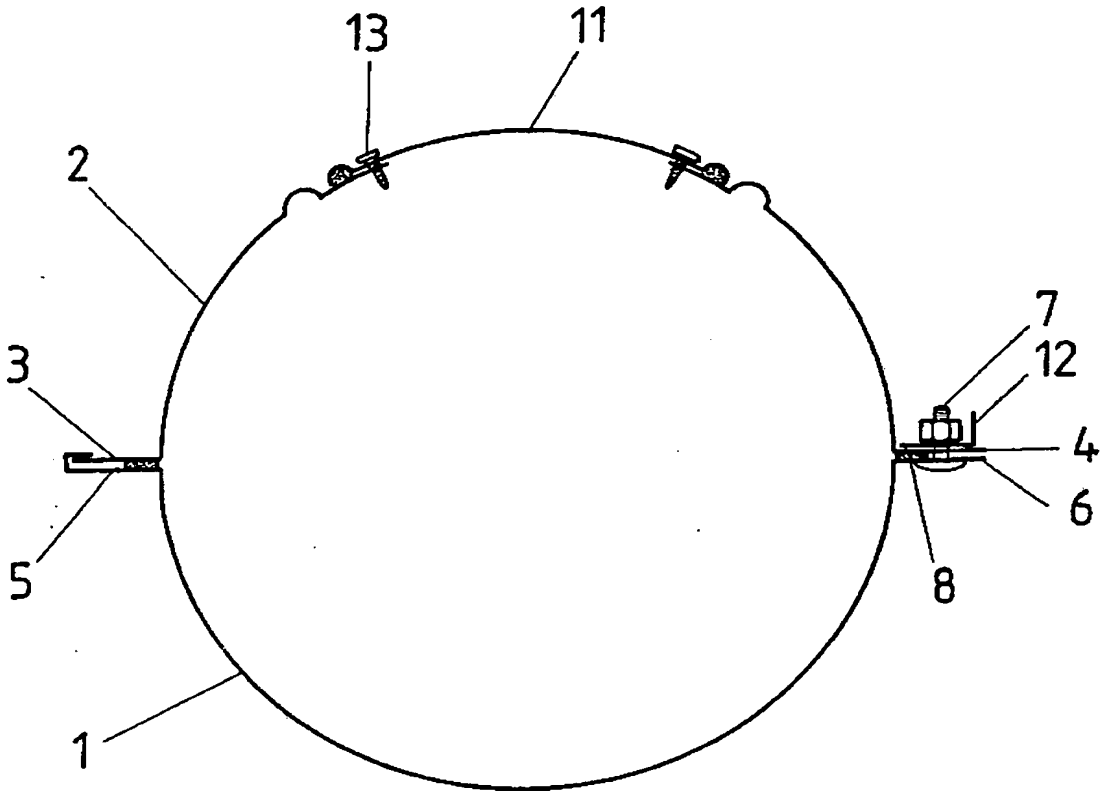

FIG. 2

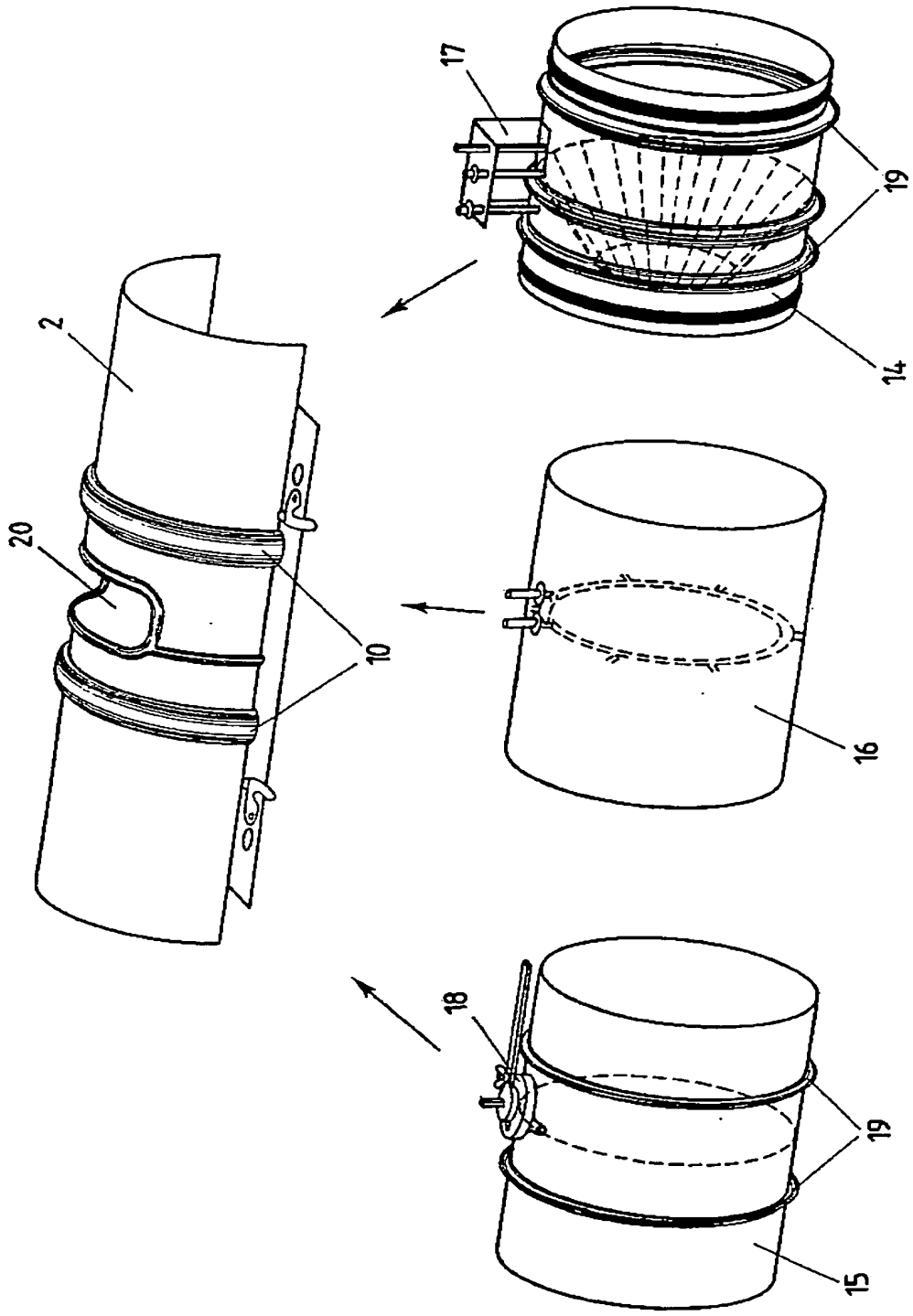

FIG. 3

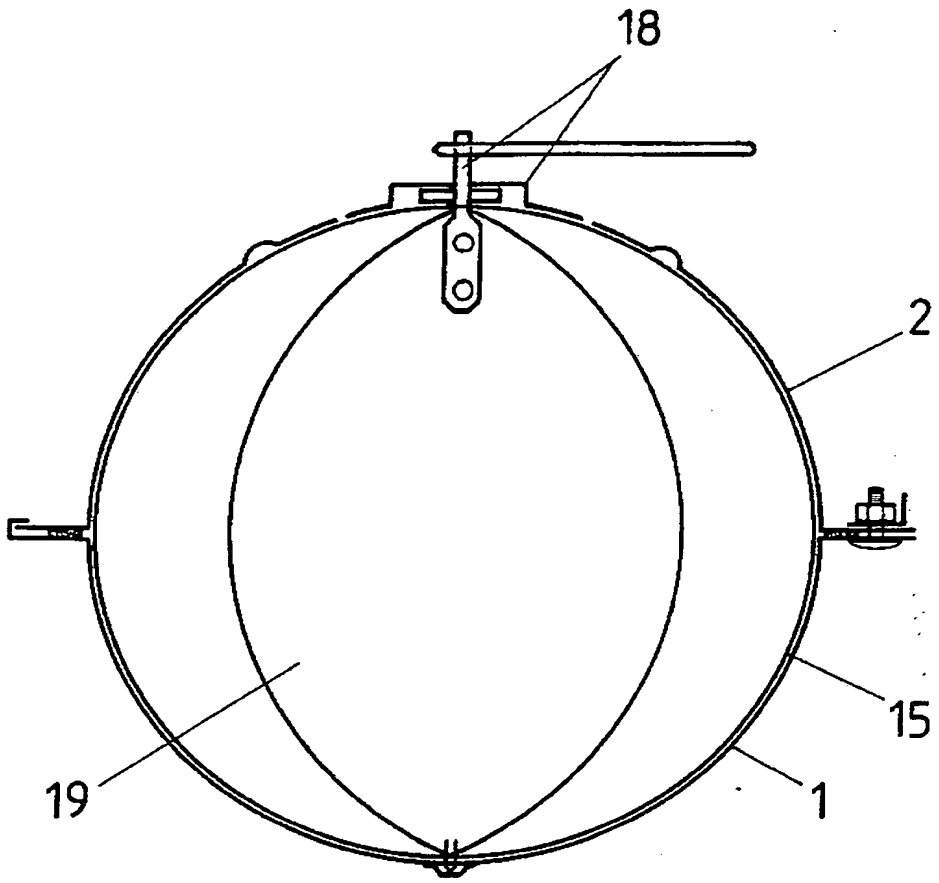

FIG. 4

INTERNATIONAL SEARCH REPORT

International Application No PCT/FI86/00126

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [5]

According to International Patent Classification (IPC) or to both National Classification and IPC

F 16 L 45/00 4

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC 4	F 16 J 13/00, /02, /06; F 16 L 45/00, 55/00; F 24 F 13/02
Nat Cl	47f:1/60, /80
US Cl	138:89; 285:93, 121; 403:10

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
X	SE, B, 434 569 (LINDAB VENTILATION AB) 30 July 1984 & SE, 8005676	1
A	DK, B, 143 301 (AKTIEBOLAGET SVENSKA FLÄKTFABRIKEN) 3 August 1981	2
X	GB, B, 604 082 (RENNIE BLAKEBOROUGH) 28 June 1948	1, 4
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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
1987-05-19	1987 -06- 01
International Searching Authority	**Signature of Authorized Officer**
Swedish Patent Office	Axel Lindhult

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